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AUTHOR Estep, Myrna L.
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ABSTRACT

The purpose of this paper is to show that the explanations of understanding as a nonknowledge concept, an "attainment" in behavior, and as a kind of theoretical knowing or "knowing that" which is exhibited by means of language propositions, are inadequate. It is also shown that the following assumption regarding understanding is inadequate: that knowing that one understands is tied solely to descriptions about that person, that certain general semihypothetical statements are true, allowing successful prediction and explanation of the behavior of that person where this behavior exhibits understanding. Particular attention is paid to exhibitions of learner understanding and it is argued that an adequate analysis of learner understanding necessitates an explication of understanding in terms of qualitative knowing, knowing the unique which is nonclassificatory. (Author)

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EPISTEMIC ANALYSIS OF UNDERSTANDING

by

Myrna L. Estep

University of Texas at San Antonio

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Surely there is a vein for the silver
and a place for gold where they find it.
Iron is taken out of the earth,
and brass is molten out of the stone.
But where shall wisdom be found?
and where is the place of understanding?

(Job xxviii. 1-12)

The purpose of this paper is to show that the explanations of understanding as a non-knowledge concept, an "attainment," and as a kind of theoretical knowing or knowing-<u>that</u>, are inadequate. I will also show that the following assumption regarding understanding is inadequate: that knowing that one understands is tied solely to descriptions about that person, that certain general (semi-) hypothetical statements are true, allowing successful prediction and explanation of the behavior of that person where this behavior exhibits understanding. Moreover, it is my intention to show that an adequate analysis necessitates an explication of understanding in terms of qualitative knowing, knowing the unique which is non-classificatory. A complete analysis of understanding is not possible here though suggestions for further analysis will hopefully be made apparent. The first part of the paper will be concerned with an analysis of arguments about understanding set forth by Scheffler (1965), Martin (1970), and Ryle (1949). Scheffler's claim that understanding is a non-knowledge "attainment" will be followed by analysis of Jane Martin's arguments for understanding as a "modified-knowledge-that" interpretation of "seeing connections." Analysis of Gilbert Ryle's position on understanding will be included throughout with particular attention paid to his distinction between knowing-that or theoretical knowing and knowing-how, and his assumption

regarding knowing that one understands as tied to semi-dispositional, semi-episodic statements. The final portion of the paper will be concerned with arguments for an adequate explication of understanding, utilizing Maccia's (1974) notion of qualitative knowing and epistemic distinctions from D. G. Brown's transformational grammatical analysis of knowing-how expressions.

Scheffler (1965) set forth epistemic conditions for what he has called the strong sense of theoretical knowing or knowing-that, the knowing-that of educative significance for him. The epistemic conditions for a learner's strong sense of theoretical knowing in educative contexts, for both analytic and empirical arguments, are the following:

X (learner) knows that Q (where 'Q' is some analytic or empirical argument) if and only if
(i) X believes that Q
(ii) X has adequate evidence for that Q

where condition (ii) includes the following subconditions:
$(ii)_1$ X has the proper pattern of argument for that Q
$(ii)_2$ X appreciates the force of the evidence for the argument that Q
$(ii)_3$ X appreciates the strategy of the argument that Q

and,
(iii) Q

It is in the explication of condition (ii) which includes subconditions $(ii)_2$ and $(ii)_3$ that Scheffler characterizes understanding as a necessary condition to the strong sense

of theoretical knowing in that it constitutes <u>having</u> adequate evidence. Subconditions $(ii)_2$ and $(ii)_3$ are taken by Scheffler to explicate understanding. Having the proper pattern of argument for that Q, which is <u>not</u> mechanically derived from the application of rules to available evidential items assures that the one who claims to know-that appreciates or knows the <u>force</u> of the clues or evidence he or she has available (Scheffler, 1965, p. 69). Understanding also includes appreciating the force of an <u>argument</u>, not just appreciating the force of evidence:

> . . .that is, one may see the general import of the reasons behind its conclusion and. . .attain a grasp of the general strategy that gives it unity. (p. 70)

In essence, a learner's achievement of knowing-that in educative contexts includes an appreciation of the strategy of the argument or the direction of the whole argument; it is being able to detect the strategy in other arguments besides the one under consideration. Utilizing an instance of analytic theoretical knowing, (though the same conditions hold with respect to empirical theoretical knowing), e.g. Euclidean geometry, it is not sufficient that the learner have all the materials for a deductive proof, such as knowing the rules and axioms of the geometry and to truly believe that a certain sentence S is a theorem in this geometry, in order to be said to

know that the sentence S is a theorem of Euclidean geometry. The learner must also be able to demonstrate the proof, exhibiting that he or she has the proper pattern of argument---and understands the argument in that he or she would, presumably, be able to "deal appropriately with new cases beyond the one under consideration" where the new cases exhibit the same deductive strategy.

According to Scheffler's own discussion of ability attributions (Scheffler, 1965, pp. 93-95), it seems clear that what is indicated with regard to understanding is a contextual ability attribution, in the sense indicated by him, that lack of training does not prevent one from dealing appropriately with new arguments beyond the one under consideration. Analysis of his explication of knowing-how shows he has tied understanding to training, which is necessary to the development in learners of critical skills and facilities. These are acquired by procedures involving repeated trials,

> . . .and including, or at least capable of being facilitated by, the process of showing how, by description, explanation, or example. This is a minimal, though crucial, element of understanding or communication, which differentiates even an automatic typing facility, from the time-telling of a clock. (p. 101)

Since understanding is not included by Scheffler as a kind of knowing, but has (it seems) included the process of

showing how, description or explanation as a necessary condition (a "minimal, though crucial, element") of understanding, it is necessary to ascertain as nearly as possible what he holds the relation between knowing and understanding to be:

> While, however, there may indeed be contexts in which knowing X conveys the connotation of understanding X, it does not seem plausible to make the proposed general reduction. A person may say without contradiction, "I know the doctrines of the existentialists, but I don't understand them". . ./or/ "He knows Newton's laws (or Shakespeare's plays) but doesn't yet understand them." (p. 17)

While one could hardly disagree with Scheffler's examples regarding what one could say without contradiction of another's knowing and understanding, it is instructive that the examples of knowing he has utilized are examples of knowing-that and knowing-that in a relatively weak sense. He clearly does not hold that understanding can be reduced to a kind of theoretical knowing, nor is it a kind of knowing-how since "Skills, or procedures and elements of know-how, carry with them a cluster of associated notions that do not apply either in the case of propensities or in the case of attainments," (e.g. understanding and appreciation) (Scheffler, 1965, p. 19). The cluster of associated notions (with respect to understanding) may be summarized as follows:

(1) The notion of repeated performance with regard to attainments is suspect though it applies adequately to know-how and propensities. ". . .what would it mean to say of a person who understands quantum theory that he had understood it every Tuesday last month. . ."

(2) One does not <u>decide</u> to understand. I.e., "A person with an understanding of quantum theory cannot choose not to understand it."

(3) The notion of practice is relevant to skills and know-how but not to understanding. I.e., "One cannot develop an understanding of quantum theory by understanding it over and over again . . ." (p. 20)

One may reasonably object that Scheffler has limited his analysis of understanding, including the above notions held not to apply to attainments, to a <u>subject</u> use of 'understand,' and he has collapsed the use of 'understand' to a dispositional use when in fact the term has (at least) both episodic and dispositional uses. That is, the examples above show that he has narrowed the use of 'understand' to the subject use, to understanding some "subject," which textually seems to mean understanding some proposition, set of propositions, or rules (p. 15). It also seems to be the case that the term 'understand' itself is used by him as a subject, i.e. a set of rules defining a performance, as the locution in (3) indicates ("understanding it over and over again"). Narrowed to such use, it is obvious that the episodic nature of 'understand' in (1) doesn't

make sense, hence Scheffler's comments, ". . .what would it mean to say of a person who understands quantum theory that he had understood it every Tuesday last month. . ." and "One cannot develop an understanding of quantum theory by understanding it over and over again. . ." The implication in his analysis is clearly that 'understand' is solely a dispositional term. Its dispositional character, in conjunction with the subject use of the term, produces the odd locutions above which he relies upon to exclude understanding as any kind of knowing or set of kinds of knowing.

Ryle's (1949) analysis, however, clearly shows that understanding has (at least) both a dispositional and an episodic character. As Raitz (1974) has argued, understanding is not entirely a disposition; nor is it only an occurrence:

> Locutions such as "beginning to understand" and "understands the lecture from beginning to end" indicate episodes more than dispositions;. . .we speak of understanding as increasing or deepening over a period of time, and since dispositions are capable of duration, one's understanding may atrophy.

Contrary to Scheffler's misleading locution (i), it may very well be the case that one had an understanding of quantum theory at one time which one no longer has, perhaps due to lack of (more or less) continuous acquaintance with the theory. It is also the case that

Scheffler has misleadingly used the term 'understanding' in the third locution above as a "subject" itself, i.e. a set of rules constituting a kind of performance. Understanding is clearly not a subject in this sense, as Ryle and Raitz (1974, pp. 1-5) have pointed out. According to Ryle (1949), ". . .there is no single nuclear performance . . which would determine that you had understood the argument" (p. 171). Thus, it seems that Scheffler has narrowed the use of 'understand' to a dispositional use, not recognizing the episodic character of the concept, and has misleadingly utilized a "subject" use of the term to produce the odd locutions above, relying upon these to exclude understanding as a kind of knowing or as a set of kinds of knowing.

It has also been argued that understanding is a "modified-knowledge-that" interpretation of "seeing connections," and that understanding is not a part of knowing-how as Ryle has claimed (Ryle, 1949, p. 54). Jane R. Martin (1970) distinguishes as mutually exclusive the sense of understanding with which she is concerned, the cognitive verb 'understand,' and 'being understanding,' which refers to attitudes, a psychological use of the term (pp. 144-146). She was concerned to set forth epistemic conditions for understanding in its cognitive sense where this is related to knowing and believing. Martin has objected

to Ryle's inclusion of understanding as a part of knowing-how, specifically his requirement that some degree of competence in performances is necessary to understand them (p. 148). For Ryle (1949), the execution of a skill and understanding "are merely different exercises of knowledge of the tricks of the same trade" (p. 55). The one who understands is a spectator who has some competence in the performance being executed, though not to the degree as the one who performs. The only sense in which Martin agrees with Ryle that understanding something involves knowing-how is that "one who understands something can answer certain questions or perform certain operations," e.g. drawing a diagram (pp. 149-150). This is merely to say that there are objective tests for understanding, not that understanding is applicable only to performances or that it includes being able to execute the performance in any way (p. 150). She states that one never understands something per se, but always under some initial description (class), and that the act of classification is always a component of understanding something (p. 158). She distinguished external understanding from internal understanding in that external understanding is characterized by the act of changing the classification of X, of relating X to some different class of things. It is clear from this description, and from her criticism of Ryle, that

she would restrict attributions of understanding to learners' demonstrations of theoretical knowing-that, i.e. propositional language assertions. She states, "Understanding requires having a certain sort of knowledge-that . . ." (p. 235).

Martin set forth conditions specifying the modified-knowledge-that interpretation of seeing connections, where "seeing connections" is interpreted in terms of true belief and an "active engagement" with the relevant information. To say that A sees connection C between X and Y is at least to say the following:

(1) A believes that X and Y bear connection C
(2) X and Y bear connection C
(3) A has a case from within the relevant subject matter for his belief that X and Y bear connection C
(4) A recognizes the case he has for the belief mentioned in (3) as a case for that belief.

Presumably, it is condition (4) which is taken to preserve the notion of "active engagement" with the relevant information, and seems to be an instance of her notion of internal classification. She holds that Ryle's spectator-performer dichotomy does not seem to be appropriate to explain certain kinds of understanding such as understanding events, concepts, etc., though all understanding does require "seeing connections," hence her modified-knowledge-that interpretation of seeing connections as understanding.

Although it is clear from Martin's account of her analysis that she does not hold it to be complete or sufficiently adequate, some extent of the inadequacies may be shown with regard to her arguments against Ryle, her position on understanding performances. Raitz (1974) has argued, contrary to Martin's position, that Ryle's concept of understanding is not a performance word though Ryle utilizes performances as examples to illustrate understanding. One reason for the mistaken belief that it is, he claims, is that Ryle's discussion of occurrences is concerned primarily with those occurrences designated by achievement words having the sense of prolonged success. Understanding is at least an achievement-occurrence word and there are two kinds of achievement words mentioned by Ryle (1949): those words which "signify more or less sudden climaxes or denouements; others /which/ signify more or less protracted proceedings" (p. 149). 'Understanding' can be used to describe the sudden achievement of genuine insight as well as protracted achievement, e.g. a learner who understands a lecture from beginning to end.

It is clear that Martin has not considered any non-theoretical knowing or non-knowing-that explanation of understanding and has rejected the claim that training in performance is a necessary condition to understanding the activity. Surely, with reference to playing chess,

one may be said to understand the game without having any case from within the accumulated knowledge about chess to back up one's beliefs regarding the connections one sees as one plays the game. As pointed out by Ryle (1949):

> . . .the boy is not said to know how to play, if all he can do is to recite the rules accurately. He must be able to make the required moves. But he is said to know how to play, if, although he cannot recite the rules, he normally does make the permitted moves. . . (p. 41)

A more crucial objection to Martin's analysis and also Ryle's, however, rests with Brown's (1970) transformational analysis of knowing-how expressions, which revealed a kind of knowing-how not reducible to nor necessitating a knowing-that or theoretical knowing, but necessitating an account of kinds of knowing which are experiential. Brown demonstrated by means of generative grammatical analysis that although Ryle's account of knowing-how has been generally taken to be procedural, there are (at least) two senses of knowing-how expressions. He showed Ryle's distinction to be indeterminate, that it isn't clear whether or not Ryle had intended to include "knowing what to do," "knowing where to begin," and "knowing that some way to do a thing is the right way," as knowing-how (p. 216). Brown's analysis established two kinds of knowing-how, the English use (here called the quasi-procedural sense of knowing-how), which is defined as that in which "if John

does not know how to V [where 'V' takes verbs as instances] then John is unable to V [where the same substitution is made on V], and the standard use (here called the procedural sense of knowing-how), which is defined as that use in which the above condition does not hold (p. 220). He is not entirely clear in his explanation of the English use of know-how, though he does hold that this sense is quasi-procedural in that it involves knowing a rule, method, or prescription, a necessary condition for one to be able to V, whether or not one actually V's. This use is exemplified by "John's succeeding in running a projector or building a house, not by luck but in a way which exhibits that he is able to do these things" (p. 220). The standard or procedural use, on the other hand, is not exemplified or proven by the performance as such, but by the manner of the performance which is very much a matter of knowing the unique, qualitative knowing, and is not reducible to knowing a class or instances of classes, i.e. knowing-that. According to Brown, "John's not knowing how [in the procedural sense] is best seen when he does move about, and capsizes the canoe". .(p. 221).

The significant point of this kind of knowing-how, procedural knowing-how, is that it will allow for an explication of the qualitative relation between knowing-how and understanding. The procedural sense of knowing-how

clearly requires that the one who claims to know-how in this sense must manifest such knowing through some form of exhibition, e.g. bodily movement, selection and manipulation of theoretical structures or symbols, etc. Exhibiting the manner of know-how indicative of procedural knowing requires at least sufficient recognition of and acquaintance with the particulars or unique qualities of that which is known of an object, event, person, or symbolic structure. Maccia (1974) has distinguished three categories of qualitative knowing which may be fruitful with respect to an adequate explication of the necessary manner of a performance exhibiting procedural knowing. A learner's public exhibition of procedural knowing may range from bodily movement to selection and manipulation of theoretical structures. Of recognitive (qualitative) knowing, Maccia explains that in addition to recognizing objects of observation, learners are called upon to recognize fitting inclusions in arguments and the force and reach of evidence in an experiment (p. 3). Acquaintive qualitative knowing is the tacit grasp of elements of a state of affairs which characterize that state of affairs uniquely, hence it is very much a matter of firsthand experience. Appreciative qualitative knowing is exhibited by a learner's judgment of the fitness of the part-whole relationships of some state of affairs (Maccia, 1974, pp. 3-4). He

argues that appreciative qualitative knowing overreaches evidential argument, that it is a knowing which is exhibited and involves more than can be said of an object. If this is the case, his categories of qualitative knowing surely allow for further analysis with respect to their relation with procedural knowing.

Understanding, at least where this has a relation of implication with knowing-how, may best be accounted for in part by means of a conjunction of kinds of knowing, including qualitative knowing which is embedded in procedural knowing-how. It should be stressed here that Brown's notion of procedural knowing-how is merely accounted for by all the expressions as "know where," "know when," "know what," "know which," etc., but the knowing itself can only be exhibited in the manner of the actual performance. This kind of knowing-how is not formulizable in that-clauses hence it is not reducible to knowing-that. The content of this knowing, then, is not a judgment (e.g. a modal assertion, knowing what one must do, ought to do, etc.) (Brown, 1970, pp. 236-237). It is because of this that procedural knowing rules out the assumption made by Ryle (Ryle, 1949, p. 46), that knowing that one (including oneself) understands is tied to semi-hypothetical statements, descriptions, allowing prediction and explanation of the behavior of persons where

that behavior exhibits understanding. If Ryle were correct, the semi-hypothetical statements would be both necessary and sufficient to account for understanding, whereas Brown's procedural sense of knowing-how necessitates a manner exhibited in the actual performance.

Brown also allowed for the fact that procedural knowing-how may be a part of (or in conjunction with) the quasi-procedural sense of knowing-how in a given performance. Some attempts to show the relations between theoretical knowing, knowing-that, and knowing-how, though inadequate in that the distinction between kinds of knowing-how was not recognized, do suggest some possibilities for an adequate analysis of at least certain kinds of understanding. One such attempt will be cited here, that of Jane Martin's proposed logical equivalence between theoretical knowing and knowing-how as presented in her criticism of Hartland-Swann's (1956) reduction of knowing-that to knowing-how (Martin, 1961, pp. 59-71). She sought to account for a sense of the statement "he knows that he should" where this refers to an internalized moral judgment or rule of conduct, which could not be accounted for in Hartland-Swann's reduction because it is a tendency and not a capacity. It seems from her account of it that it is a knowing-that in conjunction with knowing-how which

is both necessary and sufficient for the actual exercise of the tendency to behave according to moral judgments and rules of conduct, i.e. to execute moral performances. One crucial problem is that she did not distinguish the procedural sense of knowing-how from the quasi-procedural sense. She has maintained that this moral tendency is a kind of knowing-that (as she did with understanding), and success in the execution of the moral performance "whenever the occasion arises" is the necessary and sufficient condition for the attribution to someone that they know-that in this sense (p. 68). Although other problems with her proposed equivalence will not be discussed here, a more adequate specification of the logical relation may be set forth which includes Brown's procedural sense of knowing-how in conjunction with moral knowing-that and the quasi-procedural sense of knowing-how to render a plausible account of one kind of understanding, moral understanding. Knowing where, when, what, to V, where 'V' is to behave morally would necessitate one's qualitatively knowing the existing unique particulars, the qualities peculiar to a person, event, or object (including theoretical structure), could not be explained as knowing instances of classes since the notion of classification does not obtain as an explanation of knowing in the procedural sense, as Brown's analysis has shown. The following logical relation may

provide a description of moral understanding, one kind of understanding in the prolonged, achievement-occurrence sense referred to by Ryle:

$$(MU_A \longrightarrow (MP_A \longrightarrow KT_A \;\&\; (QP_A \;\&\; P_A)))$$

where

MU = Moral Understanding
MP = Moral Performance or act
KT = Knowing-That
QP = Quasi-Procedural knowing-how
P = Procedural knowing-how
A = Person

$\longrightarrow$ stands for 'only if'
$=$ stands for 'is'
& stands for 'and'

Explicated, the relation reads: If a person, A, is morally understanding, then A performs a moral act only if (moral) knowing-that obtains for A and quasi-procedural knowing-how (moral) obtains for A, and procedural knowing-how (moral) obtains for A, where the quasi-procedural knowing-how is appropriate to the moral act (i.e. knowing appropriate prescriptions) and procedural knowing-how is appropriate to the moral act (i.e. sufficient recognition, acquaintance, and appreciation of the qualities peculiar to the object, person, etc., involved in the moral act and this qualitative knowing is exhibited in the manner of the performance of the moral act). The relation, as stated, allows for moral

understanding even if the moral act is not performed by A. But if the moral act is performed by A, then the appropriate epistemic conditions necessarily obtain of A.

It also seems plausible to extend the formula to theoretical understanding to render a more adequate account of understanding as a necessary condition (or set of necessary conditions, as in Scheffler's position) to theoretical knowing. Given the proper substitution of terms in the formula, it would read: If A has theoretical understanding, then it is the case that A performs a theoretical act (i.e. theorizes), only if A knows-that of the appropriate theory, and A knows-how to theorize in the quasi-procedural sense (i.e. knows coherence, correspondence rules, etc., appropriate to theorizing), and A knows-how in the procedural sense appropriate to the theory. The procedural sense of knowing-how with respect to a given theory would be exhibited by a learner's knowing what to do with the appropriate theoretical structures or symbols when presented with new evidence or information relevant to the theory. As Ryle (1949) has succinctly pointed out, theorizing is one practice among others and is itself intelligently or stupidly conducted (p. 26). In bringing learners to know structures, understanding the theory is clearly necessary to a learner's explication of theoretical

power with respect to relevant evidence, i.e. having adequate evidence, and to a learner's ability to detect the theoretical strategy in arguments besides the one under consideration.

In conclusion, I have sought to show that an adequate epistemic analysis of understanding rules out explanations of understanding as a non-knowledge "attainment," and as a kind of theoretical knowing or knowing-that. I have also argued that the assumption that knowing one understands is tied to semi-hypothetical statements is inadequate in that procedural knowing is proved solely by a necessary manner on an execution of the actual performance. A complete analysis of understanding was not attempted here though suggestions for further analysis were made regarding understandings involving relations obtaining between qualitative knowing and procedural knowing where those relations must be explicated. My arguments support the conclusion that learner understanding, as exhibited in moral acts and acts of theorizing or theoretical knowing can justifiably be accounted for as sets of kinds of knowing.

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